

REMARKS

Reconsideration of this patent application is respectfully requested in view of the foregoing amendments and the following remarks.

The Examiner has rejected claim 21 under 35 U.S.C. 112, second paragraph, as being indefinite in lines 8-10 as follows:

"determining the similarity between the selected reference section and local sections of seismic data from the measurement data set",

The Examiner claims that it is not clear pointing out what local sections of seismic data are.

Local sections of seismic data are determined in the description and example of the invention:

The local sections and the reference pattern section are sections or subsets of the seismic data, their forms being voluminous and in the simplest case square stone-shaped. The similarity of the local seismic data to the global (or general) reference is determined and a "similarity value" is assigned to the center point of the local data section viewed. Each local section comprises different local data points and at least one center

point, wherein, a local data point of a local section may simultaneously be a center point of an adjacent local section while a center point of a particular local section may simultaneously be a local data point of an adjacent local section. Each local data point that is of interest is considered or processed using a similarity analysis, if necessary across the entire 3-D data set. For example, during a similarity analysis, each local section of a plurality of local sections is compared with just one "global" or absolute reference section. This absolute reference section is the same for all local sections considered in one similarity analysis.

This description of the local section is supported by the following text of the specification:

On page 10, second paragraph:

With a 3-D data set of measured data, which is preferably employed, the reference pattern section and the local sections are square stone-shaped sections of the seismic data at the respective location and depth in the simplest case. However, other voluminous forms of the sections are conceivable for 3-d data as well.

On page 9, lines 7-:

Motivated by such observations, the similarity of the local seismic data to the global reference is

determined for the entire data volume.

On page 15, lines 10 - 14:

The calculated similarity values are then assigned as attributes to the center point of the local data section viewed at the time, and each local data point that is of interest is taken into account, if necessary accross the entire 3-D data set.

On page 8, lines 3 - 7:

It is important to the invention in this connection that the comparison of the local section viewed in each case is carried out with a (one and the same) predetermined reference section that consists of neighbouring trace portions of a plurality of seismic traces as well.

Thus, because the applicant believes that these local sections have been adequately defined in the specification, and thus believes that this rejection should be removed.

The Examiner has rejected claim 20 under 35 U.S.C. 112 second paragraph.

Claim 20 has been amended to remove the phrase "for example" and also new claim 23 has been added which includes elements of

claim 20.

The Examiner has rejected claims 12-13, 15-16 and 21-22 under 35 U.S.C. §102(b) as being anticipated by *Bahorich et al.*

The Examiner stated that *Bahorich et al* included a method that included step (a) of claim 21. Claim 21 has been amended wherein step (a) now states:

(a) selecting an absolute reference section at a predetermined location and depth which comprises neighboring trace portions of several seismic traces;

This amendment is supported by the specification on lines 8-11 on page 7, on page 8 in the 2nd and 3rd paragraphs and is described by way of example on page 12.

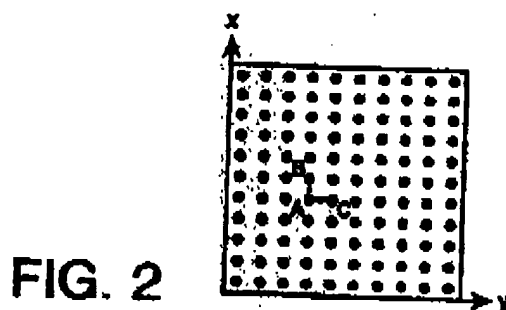
In contrast, *Bahorich et al* discloses a process that is entirely different than amended claim 21. For example, in column 3 lines 22-35, *Bahorich et al* discloses a process that provides a discontinuity analysis or a similarity analysis based on different relative points and not absolute points as disclosed below:

"The next step is to generate a "discontinuity cube." This is done by applying a coherency algorithm to the 3-D seismic data. This algorithm may take many forms. Whatever its form, its function is to compare the similarity of nearby regions of seismic data within the 3-D seismic volume. If a trace segment is similar to its neighbors (e.g., in the in-line and cross-line

directions), it is assigned a low discontinuity value; if a trace segment is not similar to its neighbors, it is assigned a high discontinuity value.

FIG. 2 is a plan view of a portion of 3-D seismic volume. In order to measure discontinuity, a trace segment at one point A is compared to adjacent trace segments B and C."

FIG. 2 is shown below:



The above paragraphs were underlined in sections to bring forth the differences between claim 21 of the present invention and the disclosure of *Bahorich et al.* The applicant believes that it is clear that the method of *Bahorich et al.* does not include step a) which involves selecting an absolute reference section wherein in step b) each local section can be compared to that same one absolute reference section. As shown above in FIG. 2 of *Bahorich et al.*, the references sections in *Bahorich et al.* are simply adjacent plot points B, and C. Thus, there is not one absolute reference section. Furthermore, *Bahorich et al.* does not disclose using a reference section outside of the local sections. *Bahorich et al.* discloses performing all comparisons of similarity or discontinuity only from the data inside the local sections without

any reference to data or patterns outside. Hence, the result of the method by *Bahorich et al* is a dataset containing the local similarity of the data. In contrast, the result of the method in claim 21 is the similarity of the local seismic data to the absolute reference section.

This general difference may be illustrated by the following example:

The traces of the 3D seismic data may be identical around location 1, and chaotic with a minimum correlation around location 2.

The method of *Bahorich et al* would find a high similarity at location 1, and a low similarity at location 2.

In contrast, the present invention would find one result from a multitude of possible similarity distributions at the two locations depending on the absolute reference section. In one extreme case, if the data in the absolute reference section was identical to the data in the local section around location 1, similarity would be high at location 1 and low at location 2. In another extreme case, if the data in the reference section was identical to the data in the local section around location 2, similarity would be low at location 1, and high at location 2.

Using an absolute reference section in this case is important because as stated in the specification on page 13, first paragraph, "it is possible to increase the reliability of the appraisal of the geological conditions in the analyzed measured data set." Thus, the applicant believes that the process according to amended claim 21 is not anticipated by the prior art.

In addition, the applicant believes that because claim 21 is patentable over the reference cited, dependent claims 12-13, 15-16, 22 and 23 should be found patentable as well.

The Examiner has rejected claims 17-20 under 35 U.S.C. 103 as being unpatentable over *Bahorich et al* in view of *Neff* (5,487,001).

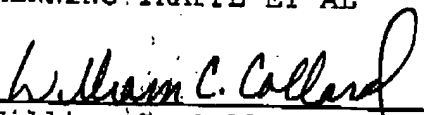
The applicant believes that because independent claim 21 is patentable over *Bahorich et al*, dependent claims 17-20 should be found patentable as well. This is because as stated above, *Bahorich et al* does not disclose a process of finding an absolute reference section and instead conducts a similarity analysis using only localized points.

Claims 20 and 21 have been amended. New claim 23 had been added. Accordingly, the applicant believes that the remaining claims are patentable over the references cited, taken either singly or in combination. Therefore early allowance of the

remaining claims is respectfully requested.

Respectfully submitted,

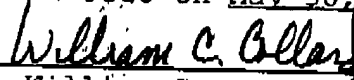
HENNING TRAPPE ET AL



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I hereby certify that this correspondence is being faxed to the
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